

# THERMOPHILIC BACTERIA AND THEIR POTENTIAL FOR INDUSTRIAL APPLICATIONS

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**Abstract:** Enzymes produced by thermophilic bacteria have great potential in industrial biotechnology due to their ability to withstand wide range of temperature extremes. They have also gained industrial importance because of the improvement and invention of various tools and technologies. Thermozyms serve as industrial enzymes superior to traditional catalysts, as they perform better in high temperature conditions required for various industrialized enzymatic processes. As a result, the characterizations of microorganisms that are able to thrive in high temperature conditions have received a great deal of attention of researchers and industrialist all over the world. This review discuss about the different uses of thermophilic bacteria in various industrial applications such as in enzyme industry, in medicines, in single cell protein production, in bioconversion of wastes, in petroleum industry, in fuel production, in mining, and as biosensors. Also, this review focuses on phylogeny and stabilizing factors responsible for the existence of these bacteria under thermal environmental conditions. Although, a lot of work has been done to understand biochemical basis of thermophily, still further research work is required with respect to the genomic and proteomic features of thermophilic bacteria and their enzymes of industrial interest.

**Keywords:** High-temperature catalysis, Industrial applications, Thermophilic bacteria, Thermophily

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